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NOTICE OF ALLOWANCE AND FEE(S) DUE

36257 7590 06/28/2004

PARSONS HSUE & DE RUNTZ LLP
655 MONTGOMERY STREET
SUITE 1800
SAN FRANCISCO, CA 94111

EXAMINER

NGUYEN, NAM THANH

ART UNIT

PAPER NUMBER

2824

DATE MAILED: 06/28/2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,749	12/18/2001	Khandker N. Quader	M-12220 US	1671

TITLE OF INVENTION: METHOD AND SYSTEM FOR PROGRAMMING AND INHIBITING MULTI-LEVEL, NON-VOLATILE MEMORY CELLS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$0	\$0	\$0	09/28/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

Mail Stop ISS FEE
Commissioner for Patents
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or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

36257

7590

06/28/2004

PARSONS HSUE & DE RUNTZ LLP
655 MONTGOMERY STREET
SUITE 1800
SAN FRANCISCO, CA 94111

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$0	\$0	\$0	09/28/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, NAM THANH	2824	365-185220

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number** is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent); ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
- ☐ Publication Fee
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)

(Date)

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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PARSONS HSUE & DE RUNTZ LLP 655 MONTGOMERY STREET SUITE 1800 SAN FRANCISCO, CA 94111			NGUYEN, NAM THANH	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 06/28/2004

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 13 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 13 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

GA

Notice of Allowability

Application No.

10/025,749

Examiner

Nam T Nguyen

Applicant(s)

QUADER ET AL.

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE and IDS filed on 3/26/04.
2. ☒ The allowed claim(s) is/are 1-45.
3. ☒ The drawings filed on 18 December 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

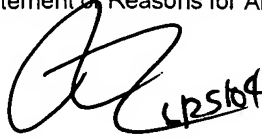
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 3/26/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


RICHARD ELMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800
 Part of Paper No./Mail Date 1

DETAILED ACTION

1. This is the response to the RCE and IDS filed on 3/26/04.

REASONS FOR ALLOWANCE

2. Claims 1-45 are allowed.

The following is an examiner's statement of reasons for allowance:

There is no teaching or suggestion in the prior art to:

“ determining whether all memory cells selected to store the first set of data bits have reached or exceeded the first predetermined threshold voltage level; if at least one memory cell selected to store the first set of data bits has not reached or exceeded the first predetermined threshold voltage level, continuing programming of uninhibited memory cells; if all memory cells selected to store the first set of data bits have reached or exceeded the first predetermined threshold voltage level, determining whether all memory cells selected to store second or third sets of data bits have reached or exceeded the first predetermined threshold voltage level; if at least one memory cell selected to store second or third sets of data bits has not reached or exceeded the first predetermined threshold voltage level, continuing programming uninhibited memory cells until all memory cells selected to store second or third sets of data bits have reached or exceeded the first predetermined threshold voltage level; and if all memory cells selected to store second or third sets of data bits have reached or exceeded the first

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predetermined threshold voltage level, continuing programming all memory cells selected to store second or third sets of data bits” as claimed in the independent claim 1; or

“ determining whether all memory cells selected to store the first predetermined charge level have reached or exceeded the first predetermined charge level; if at least one memory cell selected to store the first predetermined charge level has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells; if all memory cells selected to store the first predetermined charge level have reached or exceeded the first predetermined charge level, determining whether all memory cells selected to store second or third predetermined charge levels have reached or exceeded the first predetermined charge level; and if at least one memory cell selected to store second or third predetermined charge levels has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells until all memory cells selected to store second or third predetermined charge levels have reached or exceeded the first predetermined charge level” as claimed in the independent claim 20; or

“ simultaneously storing charge in the first, second and third sets of memory cells; continuing storing charge in the memory cells if no memory cell has reached or exceeded the first predetermined charge level; inhibiting storing charge of any memory cell in the first, second and third sets that has reached or exceeded the first predetermined charge level; determining whether all memory cells in the first set have reached or exceeded the first predetermined charge level; and if at least one memory cell in the first set has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells” as claimed in the independent claim 23; or

“determining whether all memory cells selected to store the first set of data bits have reached or exceeded the first predetermined threshold voltage level; if at least one memory cell selected to store the first set of data bits has not reached or exceeded the first predetermined threshold voltage level, continuing programming of uninhibited memory cells; if all memory cells selected to store the first set of data bits have reached or exceeded the first predetermined threshold voltage level, determining whether any memory cell has reached or exceeded a second predetermined threshold voltage level, the second predetermined threshold voltage level representing a second set of data bits; and inhibiting programming of any memory cell that has reached or exceeded the second predetermined threshold voltage level and continuing programming of uninhibited memory cells” as claimed in the independent claim 25; or

“determining whether all memory cells selected to store the first predetermined charge level have reached or exceeded the first predetermined charge level; if at least one memory cell selected to store the first predetermined charge level has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells; if all memory cells selected to store the first predetermined charge level have reached or exceeded the first predetermined charge level, determining whether any memory cell selected to store second or third predetermined charge levels has reached or exceeded the second predetermined charge level; inhibiting storing charge in any memory cell that has reached or exceeded the second predetermined charge level; and if no memory cell selected to store second or third predetermined charge levels has reached or exceeded the second predetermined charge level, continuing storing charge in uninhibited memory cells” as claimed in the independent claim 27; or

“ simultaneously storing charge in the first, second and third sets of memory cells; continuing storing charge in the memory cells if no memory cell has reached or exceeded the first predetermined charge level; inhibiting charging of any memory cell in the first, second and third sets that has reached or exceeded the first predetermined charge level; determining whether all memory cells in the first set have reached or exceeded the first predetermined charge level; if at least one memory cell in the first set has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells; if all memory cells in the first set have reached or exceeded the first predetermined charge level, determining whether any memory cell in the second set has reached or exceeded the second predetermined charge level; and if at least one memory cell in the second set has not reached or exceeded the second predetermined charge level, continuing storing charge in uninhibited memory cells in the second and third sets” as claimed in the independent claim 30; or

“ a second set of one or more memory cells selected to store a charge equal to or greater than a second predetermined charge level corresponding to a second set of data bits, wherein the memory device is configured to simultaneously program the first and second sets of memory cells and inhibit programming of any memory cell that reaches or exceeds the first predetermined charge level until all memory cells in the first set have reached or exceeded the first predetermined charge level” as claimed in the independent claim 31; or

“ inhibiting storing charge in any memory cell that has reached or exceeded the first predetermined charge level; determining whether all memory cells in the first set of memory cells have reached or exceeded the first predetermined charge level; if at least one memory cell in the first set has not reached or exceeded the first predetermined charge level, continuing

storing charge in uninhibited memory cells; and if all memory cells in the first set have reached or exceeded the first predetermined charge level, continuing storing charge in the first set of memory cells” as claimed in the independent claim 39; or

“ terminating application of the programming conditions to individual ones of the plurality of memory cells designated for the first and second threshold levels as the cells designated for the first and second threshold levels individually reach said first threshold level; after those of the memory cells designated for the first threshold level have all reached the first threshold level, applying programming conditions to those of the plurality of memory cells designated for the second threshold level; and terminating application of the programming conditions to individual ones of the plurality of memory cells designated for the second threshold level as the cells designated for the second threshold level individually reach said second threshold level” as claimed in the independent claim 41; or

“ a second set of one or more memory cells selected to store a charge equal to or greater than a second predetermined charge level corresponding to a second set of data bits, wherein the memory device is configured to simultaneously program the first and second sets of memory cells and inhibit programming of any memory cell that reaches or exceeds the first predetermined charge level until all memory cells in the first set have reached or exceeded the first predetermined charge level” as claimed in the independent claim 44.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam T Nguyen whose telephone number is 571-272-1878. The examiner can normally be reached on 8 am to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nam T Nguyen
Examiner
Art Unit 2824

6/22/04